

Speed of light

IN MONOTHESIM BOOKS, WHY?



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Therefore, to describe this highest speed on the astronomical basis, the distance covered by which in a day as the shortest astronomical time is best compared to the astronomical distance

covered by the moon as the nearest celestial object and the easiest to define its motion precisely. The lunar year is based on 12 cycles.

Hence, the puzzle of monotheism books becomes a miracle; that ***"a day is comparable to or does not exceed a thousand year"*** (in distance), based on what moon's motion be recknoed, i.e. relative to vacuum as if earth is motionless as reckoned by earth observers, then isolated earth-moon system is achieved:

"speed of light c = 12,000 moon's cycles per day (in the isolated system)'.

The physicist Stephen Hawking said:

"Light's velocity is different from the speed of anything else.

A bullet or ***moon*** or planet always has a speed that is relative to something else.

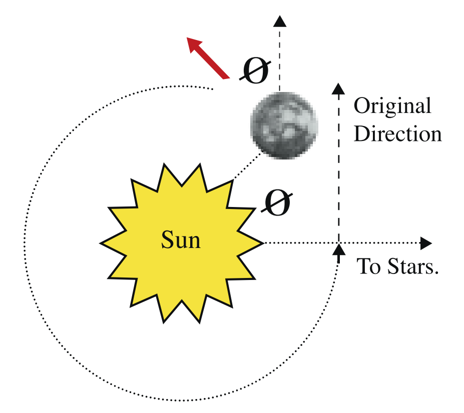
The speed of light is relative to nothing; it is an absolute constant, always the same" (Hawking' universe, p.35).

The motion of forces including light is "absolute" because it isn't affected by the observer motion; hence it is termed ***"The universal constant of motion"***, while the motion of all object is ***"relative"*** because it is affected by the observer motion.

The geocentric moon's motion as detected by the earth observers is not made from a motionless earth as reckoned by them. But to make a constant relation with the universal constant of motion c using pure parameters; the system of the moon's motion around earth should be isolated as if earth is motionless as ***reckoned*** by earth observers.

Based on the naked eye observation from the earth; the moon is reckoned circling the motionless eath, in a perfectly circular orbit, deviod from the variation ratio either in velocity or distance, as if the motion of the moon around the earth is in ***isolated system.***

This is because the moon's motion with the earth around the sun can not be detected except by an observer outside the solar system, and the variation ratio from the mean values can not be detected by the naked eye. The exclusion of this ration achieves the perfectly circular orbit exactly as it is reckoned.



The moon is in a synchronous motion around the sun during its motion around the earth. It covers an angle Ø around the sun each cycle.

Hence, the moon's direction in space is changed with respect to the stars from the original one by the same angle Ø each cycle around the earth.

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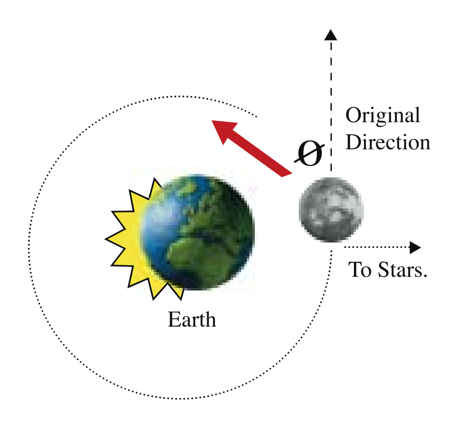
Speed of light

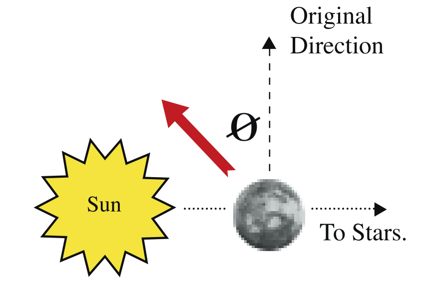
The "Velocity"

has a certain value and a certain direction (Vector), while the "mass" for example has only a certain value (Scalar).

In the isolated earth-moon (e-m) system; the moon's velocity comes again to the original direction each cycle around the earth. But, actually its direction is changed with respect to the stars from the original one by an angle Ø each cycle around the earth due to the simultaneous motion around the sun.

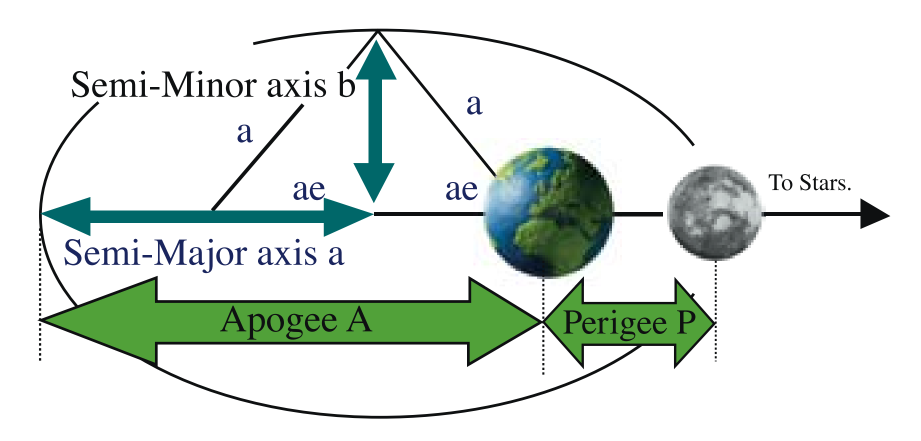
The moon covers an angle Ø around the sun each cycle and its direction fo velocity is changed.





In respect to the starts the moon's velocity direction is changed each cycle due to the heliocentric motion during geocentric one

Hence, the lunar orbit is an ellipse instead of perfectly circular one, the parameters of motion are means instead of basic and fixed ones, and either the mean velocity or the mean distance has a certain variation ratio.



The elliptical lunar orbit

Eccentricity (deviation form the circle) e=ae/a; ***Variation rationof velocity (V) or distance (R):*** 2e; ***Moon's near distance (perigee)*** P= a (1-e); ***Moon's far distance (apogee)*** A= a(1+e); ***Sem-major axis of the lunar orbit a*** =(A+P)/2=2R/ $\{1+(1-e^2)^{0.5}\}$; ***Semi-minor axis b***= $\{a^2- (ae)^2\}^{0.5}$; ***Mean distance R***=(a+b)/2; ***orbit length*** L=2πR=Vx Revolution period: T'; ***Meam velocity*** V=2πR/T'; ***angle Ø***=360 (T'/ Y'), where Y' is the revolution period of the earth.

Sidereal Year Y: 365 days, 6 hours, 9 minutes, 9.5 seconds (31558149.5 seconds = 365.25636 days).

- ***Sidereal month*** T: 27 days, 7 hours, 43 minutes, 11.5 seconds (2360591.5 seconds = 27.32166088 days): (sidereals year/synodic month) + 1 = (sidereal year/sidereal month).
- ***Sidereal day*** t: 86164.09966 seconds: (sidereal year/synodic day) + 1 = (sidereal year/sidereal day).
- ***The Deviation angle of the earth-moon system in relation to vacuum*** (due to motion around sun every sidereal month) Ø: 26.92847817 [Ø = 360T/Y], Cosine Ø: 0.891572542289913397, 2e = 1- cosine Ø = 0.108427457710086603, e = 0.0542137288550433015 (about 0.055).
- $\underline{\pi}$ = (3.1415926535898).

It is known that "accelerate" means to change speed,but in case of planet for example the regular change in direction reflects acceleration also, therefore the direction change of the moon's velocity is acceleration., Hence, to achieve the pure geocentric moon's velocity V' in the isolated e-m system, it is plausible to exclude the effect of the heliocentric motion from the actual one. This can be done either by exclusion of the variation ratio 2e of the moon's mean velocity V from its mean value ***V'=V(1 -2e)***, or by analysis of the mean velocity V as a force to define the value of its component in the original direction V' after one cycle: ***V' = V cosine Ø.***

The mean velocity V

Ø

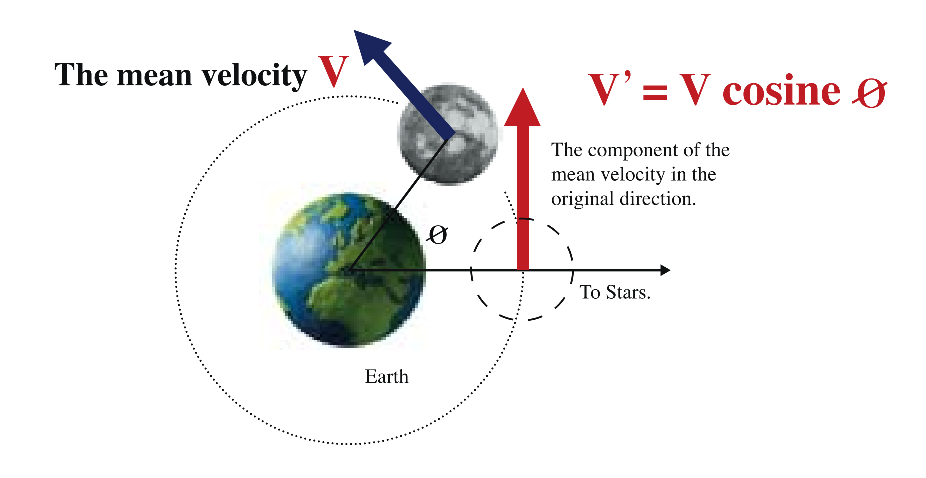
V ’= V cosine Ø

The component of the mean velocity in the original direction.

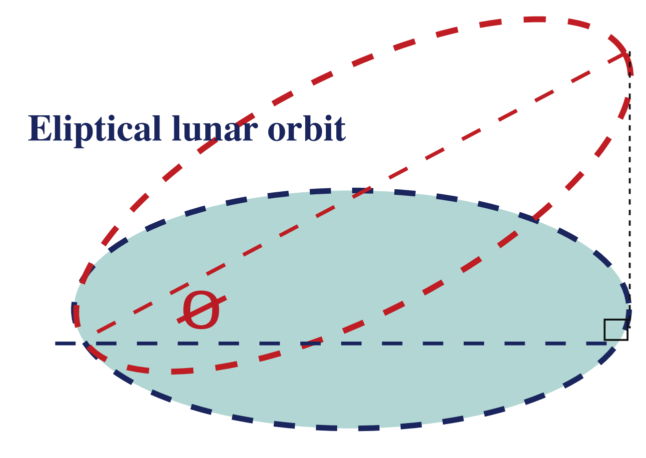
To Stars.

Earth

The Analysis of the lunar mean velocity in the original direction to define the velocity value in the isolated earth-moon system.



Lunar velocity relative to earth is (V), but due to the acceleration the direction is changed every cycle by an angle Ø, hence the lunar velocity relative to vacuum guided by stars is V Cos. Ø



The perfectly circular orbit of the moon in the isolated earth-moon system is the projection of the astronomically based elliptical one.

Subsequently, the lunar orbit deviation from a circle (eccentricity) can be defined precisely: ***e = 1 /2 (1- cosine Ø)***, as well as the pure distance ***(L'=V'T')*** covered by the pure geocentric motion of moon each month.

All laws of motion are defined in isolated system to avoid the external effects and to reveal the constant relations.

Therefore, it is essential to use the isolated e-m system to define the costant speed of light value c by the pure non-variable moon's motion parameters, and to unify the pure lunar orbit length L' and the earth rotation period t' in one constant relation:

c = 12000 L'/t' = 12000 V cos. Ø T' /t'.

For more precise calculation; the lunar heliocentric angle Øº is (360 T'Y'): 26.92847817º (about 27º), cosine Ø is: 0.8915725423 (about ***0.89***), the variation ratio of the moon's mean distance or velocity 2e is (1-cosine Ø): 0.1084274577 (about ***0.11***), and the eccentricity of the moon's orbit e is (2e/2):

0.054213728852 (about ***0.055***).

The moon completes a circle (360º) with the earth around the sun with respect to the stars in ***365.25636*** mean days ***(The sidereal year Y')***. The earth rotation period t' with respect to the stars is ***86164.09966*** seconds ***(The sidereal day)***, but with respect to the sun the (synodic) day t is ***86400*** seconds. The difference in time is due to the earth revolution around the sun during its rotation around itself. These differences make an extra rotation cycle t' each revolution: Y'/t = (Y't') - 1. Similarly, the moon's revolution period ***T'*** is ***27.32166088*** means days ***(The sidereal month)***. The pure period (t' and T') are considered in the isolated e-m system.

The moon's mean velocity was found to be about ***1.023*** km. /sec. (Laros Astronomy, p.142), and the value ***1.022794272*** (about ***1.023***) km/sec. achieves exactly the speed of light value in vacuum c, which is the most important value in Physics, and which is defined only recently since 1983:

V = 1.022794272 km. / sec., Cosine Ø = 0.8915725423, ***t'*** = ***86164.09966*** sec.,

T' = 27.321088 days = 2360591.5 sec., ***L'*** = V Cos. Ø T' = ***2152612.269*** km. So:

c = 12000 ***L't'*** = ***299,792.458*** (about 300,000) km. /sec.
This is exactly the known value today for the speed of light c
(The Encyclopedia Britannica 2003, the Encarta encyclopedia 2003).



Ole Christensen Roemer (1644-1710)

This precise value for speed of light is the latest step in a long history of measurements, ending in the ***1983*** when it was accepted in the conference of Paris for the measurements, and beginning in the early 1600s with an unsuccessful attempt by Galileo to measure the speed of the lantern light.

The first evidence that the speed of light is finite was given in ***1676*** by ***Olas Romer***.

The value defined by him for the speed of light was about ***227000*** km. /sec.

Realization:

In the equation (c=12000L't'); at present: L' = 2π R' = V'T' = 2152612.269 km. (π = 3.1415926535898). Therefore: V'=0.9118952894 km/ sec., V =V/cosine Ø =1.022794272 km/sec. (cos. Ø = 0.8915725423), R' = ***342,598.8832*** km., R = R'cos. Ø = ***384,263.6095*** km., semi-major axis a = 384546.3752 km., semi-minor axis b = 383980.8438 km., Perigee (the near distance) P = ***363,698.6823*** km., and apogee = ***405, 394.0681*** km.

These values are in agreement with astronomically defined ones based on ***the approximate value*** of the lunar orbit eccentricity ***(0.055)*** and the value ***384,405*** km. for the lunar orbit semi-major axis, with the following results (Astrophysics, Zeilik and Neilson, New York, p53): the near distance of the moon p = ***363,263*** km. and the far distance A = ***405,547*** km.

A trial to explore the unification in origin

As long as the initial velocity in any system of motion is isolated without external effect; sum of which as a vector will be constant forever.

In the equation (c = 12000 L't');

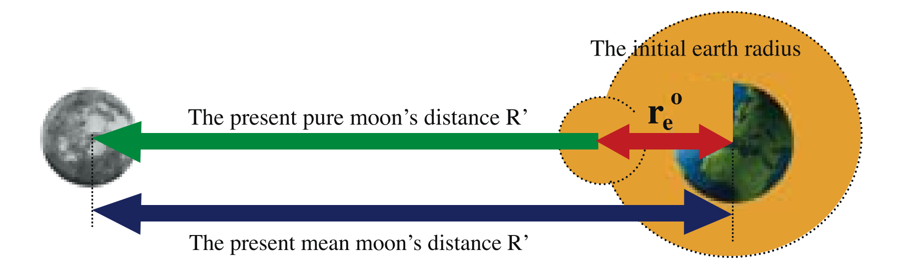
c is dealt with as a constant value, so the lunar orbit length L' should be related to the earth rotation period t' by a constant value:

$$(L'/t'=299792.458 /12000 = 24.98270483)$$

which is achieved if the moon is on the earth periphery with similar earth rotation t' and moon's revolution T' periods (L't' = V'T'/t' = V').

Then, it should represent the rotation velocity of the initial earth:

(24.98270483 km. /sec).



The difference between the pure and the mean moon's distances (from the centre to the centre) is a fingerprint representing the initial earth radius length (R - R' $=r_e^o$).

At meeting of moon and earth centers; R' = zero, so the value (R - R') must equal radius of initial earth r_e°=***41,664.7263*** km. Hence, its rotation period t'o must be ***10,478.73711*** sec., which is near expected value (***2.5*** hrs) if separation was from earth with the present mean radius (6371.3 km).

The value R-R' equals 2e (2e=1-cos. H) relative to R; so at any time:

$$r_e^o/R = 2\,e = 1 - \cos.\ H.$$

The value 2e represents the ratio in the motion of the moon resulting from its motion around the sun. At contact of the moon with the earth:

$$r_e^o\ R = 2\,e = 1 - \cos.\ \text{Ø} = 1.$$

Therefore, ***the motion of the moon should be totally around the sun as a peripheral point.***

The angle Ø was in its maximum 90º (cos.Ø:Zero), making a ***tangential direction of the moon with the sun's centre confirming that it was a peripheral point of it.***

Due to Unitarian origin; earth and moon may be viewed as a ***twin plant***. The value e = 0.5 reveals the maximum eccentricity at which the earth and moon were prone to escape. At contact of them with the sun; the earth revolution and the sun rotation periods were similar (Y' = T' 360/Ø = ***4t'º***).

A residual distance exists after the complete recession of the moon in the isolated e-m system which represents the initial earth mean radius reº therefore, the actual moon's distance R of the initial lunar orbit was ***$2r_e^o$***. The lunar parameters at contact of the moon with the earth are reflections to the initial lunar orbit; so its parameters can be defined provided that 2e = rº/R = 0.5, and Ø = ***60º*** (cos. Ø = 0.5). The angle 60º is the equilibrium angle because at which the sun and earth effects on the moon were equal. The doubling of the moon's distance means that the moon's mean orbital velocity V should be half of the rotation velocity of the initial earth 0.5 Veº. Hence, the pure lunar motion

that represents the escape velocity of earth can be defined (V' = V cosine Ø =0.5 x 0.5 V e°): ***6.245676208*** km/sec. Then, the actual moon's revolution period (T') value was ***4t'°*** (V'T' = 4V't').

Because of the unified origin of the sun, earth, and moon, the escape velocity of any of them at contact depends either on the radius or the mass ***($r_1/r_2 = V_1/V_2$, $M_1/M_2 = V_1^3/V_2^3$)***. Consider the present masses ***(sun: 1.99 x10^{30} kg, earth: 5.9736 x 10^{24} kg, moon: 7.35x10^{22} kg.)***, so th escape or rotation velocity and mean radius of the sun and moon can be defined; the sun escape velocity was ***432.963991*** km /sec. and its radius was ***2888290.327*** km., and the moon escape velocity was ***1.441882483*** km. /sec. and its mean radius was 9618.756561 km.

Then, ***the unified mean density*** of either the sun, earth, or moon ***($3M/4\pi r^3$)*** was: ***19.7170496*** kg. /meter^3.

Realization: Intial mean density of:

Sun: ***3x1.99x10^{30} / {4x3.1415926535898x$(2888290327)^3$}***
= ***19.71770496*** kg./meter^3.

Earth: ***3x5.9736x10^{24} /{4x3.1415926535898x$(41664726.3)^3$}***
= ***19.7170496*** kg./meter^3.

Moon: ***3x7.35x10^{22} /{4x3.1415926535898x$(9618756.561)^3$}***
= ***19.7170496*** kg./meter^3.

The mean density of the earth at present is 5520 kg/meter^3, there the initial earth volume was about ***280*** times larger. Similarly, the initial volumes of the sun and the moon were respectively about ***70*** and ***170*** times larger based on the present densities (1409 and 3342 kg/meter^3).

To compare the mean density of the solar system nebula; the density of the distilled water is: 1000 kg. meter^3 (about ***50 times larger***), and the mean density of air at sea level is: 1.3 kg/meter^3 (about ***15 times smaller***).

This result is in agreement with the hypothesis that the nebula; from which our world was formed, was mainly a collection of gas and dust as a part of

our galaxy.

Applying the projectiles law ($v^2 = 2MG/r$; where V the escape velocity, M the projectile mass, G the gravity constant. r the earth radius); the ***gravity constant G*** nwhen our galaxy formed was: ***1.36038342 x 10***$^{-19}$ km^3/kg/sec^2; ***about 2 times the present one*** (6.67 x 10^{-20} km^3/kg/sec^2), exactly as expected by Paul Dirac (19021983-) that G was larger in the past.

Because of the minor external effects; consider the heliocentric motion of the earth is in isolated system.

The present earth distance from sun R_e should be related to the present equatorial sun rotation period t_s according to the initial escape velocity of the sun V_s^o

(***432.963991*** km. /sec.) at whihc earth escaped in a similar relation to that of e-m system ***($V_s^o = 2\pi R_e/t_s$)***.

Realization:

Present equatorial sun rotation period is slightly larger than 25 mean days, and the value ***25.12694896*** mean days defines exactly the present earth distance from sun: ***149,597,870*** km. which is termed ***"The astronomical unit"*** because it is used in measure inside solar system.

The rotation and escape velocities of initial moon or sun were similar.

The initial Earth rotation velocity was 4 times larger than its escape velocity indicating that it was a ***whirl at the periphery of the initial sun.***

Initial moon rotaion period was also similar to its revolution period indicating that ***present ovoid-shaped moon with long axis towards earth may face it by the same face since beginning*** ($2\pi r_m$/the lunar rotation velocity = $2\pi R_m$/the mean lunar orbital velocity = ***41914.9484*** seconds).

Because of the angular momentum conservation (MVR= constant); ***the lost moon's mass*** can be defined:

$M/M^o = V^oR^o / VR =$ ***0.8329464537***.

Therefore, it had lost a reasonable ratio of its original mass about ***16.7%***. The loss of most of its gases may be due to its low gravity in comparison with the sun that has 99.86% of the solar system mass in a gaseous state.

The six successive days-like periods of universe creation in religious books can be divided into ***three main stages:*** one for what was happened before the earth separation as a part of our galaxy, one for the earth interior layers, and the last one for the earth crust and atmosphere that were established since about ***0.25*** billion years (Encyclopedia Britanica). The recent data is consistent with the religious books classification for the

universe creation, because the age of the universe was found to be about ***12.5*** (10 - 15) billion years and the age of the earth crust and atmosphere was found to be about ***4.3*** (4 -4.6) billion years.

So, the age of earth and moon separation as parts of our galaxy should be about 8.4 billion years, at which the mechanics of the earth-moon-sun system was really started. The accumulated distance by the moon's recession is 300934.1569 km, hence, ***the annual moon's recession rate should be about:*** ***3.6 cm / year,*** which is the exact known value today by laser telemetry since Apollo 11 mission in July 1969 where reflectors were put on the surface of the moon.

The same value of solar nebula age and

earth separation (about ***8.4*** billion years) can be obtained if we consider what the last monotheism book has mentioned that length of the calender year at the end of our world creation (since ***0.25*** billion years) is ***12*** of the mean length of present calendar months (***29.530588*** days), because the present length of calender year is ***12.368267*** months with an acccumulated extra value of ***0.368267*** in ***0.25*** billion years, so total length of present yeat is accumulated in a period of ***8.4*** billion years; the age of our galaxy . This indicates that dynamics of earth and moon was formed with our galaxy before their own formation.

"Verily, the count of the months (in a year) ***in the sight of God*** (according to his design) ***was twelve of the present months at the time of*** (full) ***creation of the heavens and the earth*** (our visible universe)" (9 / 36).

In the isolated e-m system; the moon's distance R' and the day length t', as well as the moon's recession rate ΔR' and the day length increase rate Δ t' should have a constant relation: R'/t' = ΔR'/Δt' = ***3.976120966***.

This relation can be expressed by the moon's velocity: V't' = constant (78572.6366), and can be expressed by the moon's distance instead of the earth rotational period: ***V'R'*** = constant. To avoid the mass ***M*** changes effect; it may be considered, hence the fundamental law in physics of the circular motion is achieved which is ***conservation of angular momentum*** (***MVR*** = constant) ***confirming conserved dynamics of isolated e-m system.***

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A certain Order means One conscious Will beyond



Chaos never exists, but instead the whole physical world is in order according to certain laws, and the Unitarian origin of the earth and moon with the sun extends to cover the whole universe Unity in one beginning which reflects One Will beyond. This is also what the British physicist Stephen Hawking said: ***'The whole history of science has been the gradual realization that events do not***

happen in an arbitrary manner, but that they reflect a certain underlying order." (Brief history of Time, page 140) The Stephen Hawking conclusion was very clear and decisive, he said: ***"So long as the universe had a (Certain one beginning.. it had a (Certain one) Creator."*** (Brief history of Time, page 122).

Subsequently, the Creator who made the order should not be divisible for visible but instead one and unique.

This is the most probably aim of "*the Monotheism books relation of ultimate unification*"; particularly because this is the frequently declared aim as " *the original belief*'.

To know the fact don't forget this One thing

In the Bible; the relation is still clear although there are not details or a definite indication to the universal upper limit speed, and what is comparable to 1000 years is not fixed to a day, hence the interpretation was only a philosophical one that the Creator is beyond the time, so a thousand years for him may be a day or only an hour; or even the reverse.

Ps904/: ***"For a thousand years in your sight Are but as yesterday when it is past, As a watch in the night."***

2Pt3/8: ***"But don't forget this one thing, beloved that one day is with the Lord as a thousand years, and a thousand***

In the Knoran; there are three verses having the same keywords of the relation; ***"a day"*** and ***"a thousand years"***, but each context is particular.

One gives the relation making it ***according to what earth observers reckon,*** hence the motion of moon around the earth ***on which the Arabic (lunar) years are based*** becomes in isolated system determining correct way used in all physical motion equations: ***"And verily, a day in the sight of your Lord is as a thousand years according to what you reckon"*** 2247/ (At your Lord; according to Islamic belief, doesn't mean except according to the design in the whole universe that has been created by the Lord).

The Koran second verse in not only emphasizing that this relation is constant; but also it gives many details indicating by analysis that this implied speed is universal and the upper limit for the traveling, space is not empty but it is full of what we call forces, all have a Unitarian upper limit speed and a curved path in the space, these forces and matter are unified in origin and fate (one essential building matter), the earth with its satellite and sun are unified in origin and mechanics as well as all celestial objects in the universe, and the whole universe should have a unified end at which everything will be vanished again exactly as it was at the unified beginning reflecting an

indivisible One Great Will beyond lasting forever.

"He (your Lord) ***manages everything, from the heaven to the earth*** (to be in order).

Then (accordingly), ***there is what is traveling*** (forces) ***in a curved path*** (filling the space) ***until the end;*** (to cover) ***in a day a measure that cannot exeed a thousand years according to what you recknon"*** 32/5.

The speed of light in vacuum can not be exceeded by any mass-bearing object and the upper-limit speed for the traveling forces in the universe; hence it is suitable speed by which the huge astronomical distances can be measured using the suitable unit of time. The

moon is about 1 second far, the sun is about 8 minutes, the nearest star (Alpha Century) is 4.3 years, and the nearest galaxy (Andromeda) is about 2 million years. To define the upper-limit distance or the radius of the universe on the astronomical basis; the suitable unit of time is the maximal one we can define, which is the sun's year, or the period of a circle covered by the sun around the centre of our galaxy (Milky way), it is about ***250*** million years. The beam of light covers universe radius in its age which was found to be about ***12.5*** (10-15) billion years, or ***50*** by feasible time units ***(Sun's years)***.

Excluding the keywords indicative to the universal constant of motion ("a day" and "a thousand years"); still a keyword (50) in the third verse contextually indicative to the maximal astronomically observable distance by maximal speed and the units of time feasible for measure (sun's years).

"The (non-physical messengers) Angels and the Spirit are traveling in (the universe) curved paths until the end (covering a huge expansion); of a measure of fifty (feasible units of time); thousand years in a day" 704/.

Amazingly; maximal astronomical distance in last monotheism book is definied as "a measure of fifty; thousand years in a day" that contextually means: "50 (feasible time units) by the 1000 years per day speed". This distance can't

be measured by traveling of any physical being due to the time barrier during traveling in the dynamic universe by a limited speed.

The plausible conclusion of these scientifically based measures is that prophets message is one, and what is incomplete and distorted by time is detailed and corrected in the last one; with evidences of Divine Inspiration confirming that Creator is unique, invisible and indivisible, but only One.

The Koran tells us that it has been revealed by the Great God himself by the same message (Monotheism) of the previous book, but with more details describiing obscure facts about the physical world and absence of change or

distortation, so the Koran is dominating over it, and should not be rejected: "We (An expression of Greatness) have revealed to you the Book truthfully confirming what was in the previous book; but dominating over it."5/48

Basic Data:

- ***Sidereal Year*** Y: 365 days, 6 hours, 9 minutes, 9.5 seconds (31558149.5 seconds = 365.25636 days).
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Speed of light

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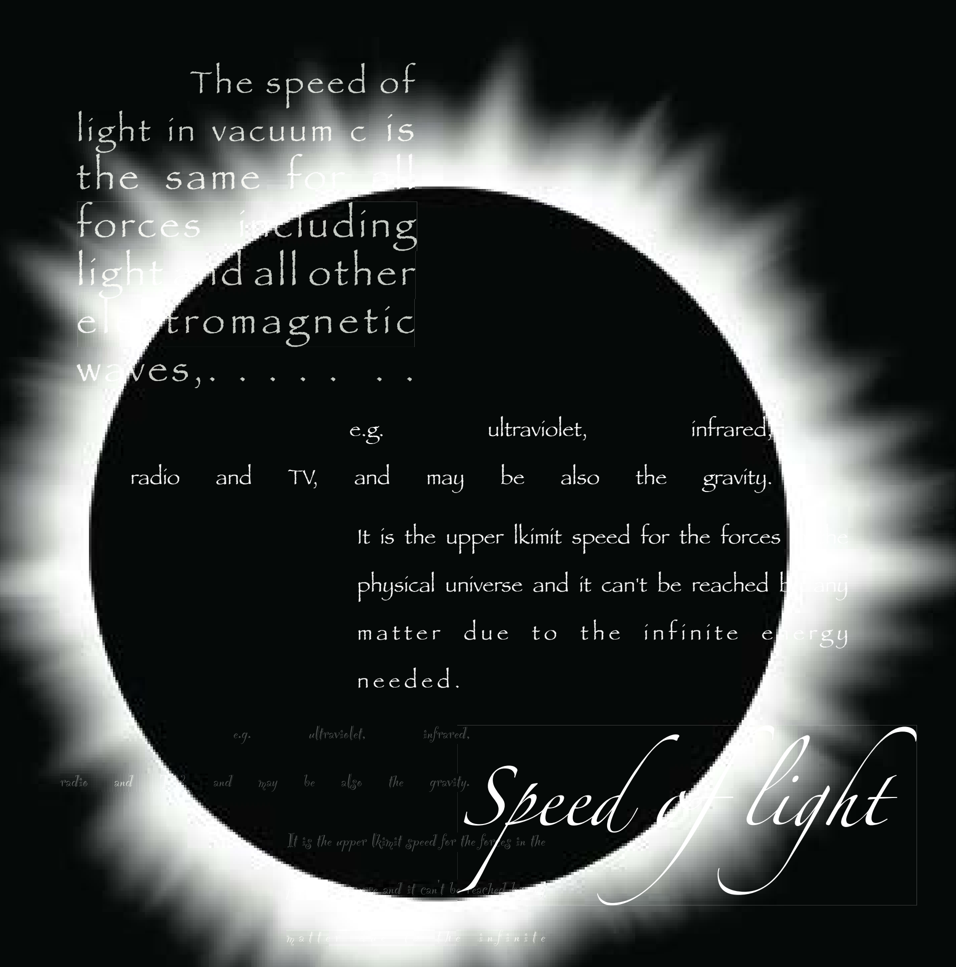
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